



TRANSMITTAL FORM <small>(to be used for all correspondence after initial filing)</small>	Application Number	10/765,525	
	Filing Date	January 27, 2004	
	First Named Inventor	Hai et al.	
	Art Unit	Unknown	
	Examiner Name	Unknown	
Total Number of Pages in This Submission	39	Attorney Docket Number	A3-245 US

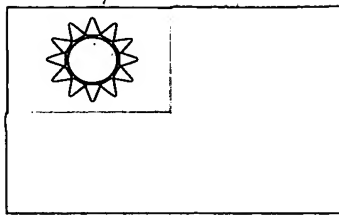
ENCLOSURES (Check all that apply)		
<input type="checkbox"/> Fee Transmittal Form	<input type="checkbox"/> Drawing(s)	<input type="checkbox"/> After Allowance Communication to a Technology Center (TC)
<input type="checkbox"/> Fee Attached	<input type="checkbox"/> Licensing-related Papers	<input type="checkbox"/> Appeal Communication to Board of Appeals and Interferences
<input type="checkbox"/> Amendment/Reply	<input type="checkbox"/> Petition	<input type="checkbox"/> Appeal Communication to TC (Appeal Notice, Brief, Reply Brief)
<input type="checkbox"/> After Final	<input type="checkbox"/> Petition to Convert to a Provisional Application	<input type="checkbox"/> Proprietary Information
<input type="checkbox"/> Affidavits/declaration(s)	<input type="checkbox"/> Power of Attorney, Revocation Change of Correspondence Address	<input type="checkbox"/> Status Letter
<input type="checkbox"/> Extension of Time Request	<input type="checkbox"/> Terminal Disclaimer	<input checked="" type="checkbox"/> Other Enclosure(s) (please identify below):
<input type="checkbox"/> Express Abandonment Request	<input type="checkbox"/> Request for Refund	
<input type="checkbox"/> Information Disclosure Statement	<input type="checkbox"/> CD, Number of CD(s) _____	
<input checked="" type="checkbox"/> Certified Copy of Priority Document(s)	Remarks Verification and English Translation of Taiwan Application No. 92201963 filed 30 January 2003	
<input type="checkbox"/> Response to Missing Parts/Incomplete Application		
<input type="checkbox"/> Response to Missing Parts under 37 CFR 1.52 or 1.53		

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT	
Firm or Individual	Robert J. Zeitler
Signature	
Date	02/23/2004

CERTIFICATE OF TRANSMISSION/MAILING	
I hereby certify that this correspondence is being facsimile transmitted to the USPTO or deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: Commissioner for Patents, Washington, DC 20231 on this date: 02/23/2004	
Typed or printed	Kerr Richardson
Signature	
Date	02/23/2004

This collection of information is required by 37 CFR 1.5. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, Washington, DC 20231.

If you need assistance in completing the form, call 1-800-PTO-9199 (1-800-786-9199) and select option 2.



中華民國經濟部智慧財產局

INTELLECTUAL PROPERTY OFFICE
MINISTRY OF ECONOMIC AFFAIRS
REPUBLIC OF CHINA

茲證明所附文件，係本局存檔中原申請案的副本，正確無訛，
其申請資料如下：

This is to certify that annexed is a true copy from the records of this
office of the application as originally filed which is identified hereunder:

申請日：西元 2003 年 01 月 30 日
Application Date

申請案號：092201963
Application No.

申請人：莫仕股份有限公司
Applicant(s)

局長
Director General

蔡練生

發文日期：西元 2004 年 2 月 16 日
Issue Date

發文字號：09320140170
Serial No.

申請日期：	IPC分類
申請案號：	

(以上各欄由本局填註)

新型專利說明書

一、 新型名稱	中 文	散熱裝置 (二)
	英 文	
二、 創作人 (共2人)	姓 名 (中文)	1. 唐濟海 2. 張敏
	姓 名 (英文)	1. 2.
	國 籍 (中英文)	1. 中國大陸 CN 2. 中國大陸 CN
	住居所 (中 文)	1. 中國廣東省東莞市石碣鎮桔洲第三工業區銘華路C區 2. 中國廣東省東莞市石碣鎮桔洲第三工業區銘華路C區
	住居所 (英 文)	1. 2.
三、 申請人 (共1人)	名稱或 姓 名 (中文)	1. 美商莫仕股份有限公司
	名稱或 姓 名 (英文)	1. MOLEX INCORPORATED
	國 籍 (中英文)	1. 美國 US
	住居所 (營業所) (中 文)	1. 美國, 伊利諾州60532-1682里斯, 威靈頓區2222號 (本地址與前向貴局申請者相同)
	住居所 (營業所) (英 文)	1. 2222 Wellington Court, Lisle, IL 60532-1682
	代表人 (中文)	1. 路易士. 耶. 賀特
	代表人 (英文)	1. LOUIS A. HECHT



四、中文創作摘要 (創作名稱：散熱裝置(二))

一種散熱裝置(二)，包括有一導熱板、一散熱器及一導熱柱，該導熱板設有一承接面，該散熱器設有一底部呈開口狀之橫向組裝孔，該導熱柱置於該散熱器之組裝孔中，且令該導熱柱下緣露於該散熱器底部，該導熱柱係匹配橫置於該導熱板之承接面上；藉此，可組成一具有良好的散熱效果，可獲得較佳散熱效率之散熱裝置。

五、(一)、本案代表圖為：第二圖

(二)、本案代表圖之元件代表符號簡單說明：

2 0	導熱板	2 1	承接面
3 0	散熱器	3 1	散熱鰭片
3 2	組裝孔	4 0	導熱柱

英文創作摘要 (創作名稱：)



一、本案已向

國家(地區)申請專利

申請日期

案號

主張專利法第一百零五條準用
第二十四條第一項優先權

無

二、☐主張專利法第一百零五條準用第二十五條之一第一項優先權：

申請案號：

無

日期：

三、主張本案係符合專利法第九十八條第一項☐第一款但書或☐第二款但書規定之期間

日期：



五、創作說明 (1)

【 新 型 所 屬 之 技 術 領 域 】

本創作係有關於一種散熱裝置 (二)，尤指一種可置於電子發熱元件上，用以協助電子發熱元件散熱之裝置。

【 先 前 技 術 】

隨著電腦產業迅速的發展，中央處理器等電子發熱元件之發熱量愈來愈高，且尺寸也愈來愈小，為了將此密集熱量有效散發於系統外之環境，以維持電子發熱元件能於許可溫度之下正常的運作，通常會以具有較大面積之散熱器附設於電子發熱元件表面上，用以協助電子發熱元件散熱，俾能有效的掌握電子發熱元件的執行及使用壽命。

請參閱第一圖，其係一種習知的散熱裝置，包括有一導熱板 10、一導熱柱 11、一散熱器 12 及一風扇 13，其中該導熱板 10 係呈板狀，該導熱柱 11 係為一柱形導熱管，該導熱柱 11 係豎直設置於該導熱板 10 上，該散熱器 12 係由多個散熱鰭片 14 所組成，該等散熱鰭片 14 係呈水平狀設置於該導熱板 10 上，該導熱柱 11 穿設於該等散熱鰭片 14 中，可藉該導熱柱 11 將該導熱板 10 上的熱均勻的傳遞至該等散熱鰭片 14，使散熱器 12 傳熱較為均勻，以期獲得較佳的散熱效果。

該導熱板 10 可置於電子發熱元件上 (圖略)，且利用適當的扣具予以固定，使電子發熱元件所產生的熱可依序傳遞至該導熱柱 11 及該散熱器 12，藉散熱器 12 之散熱鰭片 14 協助電子發熱元件散熱。該風扇 13 係設置於該散熱器 12 前側，當該風扇 13 轉動時，可驅動氣流



五、創作說明 (2)

流動，使冷空氣流過該散熱器 1 2 之散熱鰭片 1 4，用以協助散熱鰭片 1 4 散熱，並將熱空氣由該散熱器 1 2 後側排出。

惟，上述習知之散熱裝置，其導熱柱 1 1 係採豎直設置，當風扇 1 3 驅動氣流流動時，會於該豎立設置之導熱柱 1 1 後方形成氣流無法抵達的死角，熱氣容易滯流，連帶的使得導熱柱 1 1 後方的散熱鰭片 1 4 無法正常的散熱，使其散熱效率大打折扣，無法達成預期的散熱效果。

是以，由上可知，上述習知的散熱裝置，在實際使用上，顯然具有不便與缺失存在，而可待加以改善者。

緣是，本創作人有感上述缺失之可改善，乃特潛心研究並配合學理之運用，終於提出一種設計合理且有效改善上述缺失之本創作。

【新型內容】

本創作之主要目的，在於可提供一種散熱裝置 (二)，其不會有於導熱柱後方形成熱氣滯流的情況發生，具有良好的散熱效果，使散熱器具有較佳散熱效率。

本創作之另一目的，在於可提供一種散熱裝置 (二)，其導熱柱與導熱板間具較大的接觸面積，使導熱板上的熱可更有效的傳遞至導熱柱及散熱器，具有較佳散熱效率。

為了達成上述之目的，本創作係提供一種散熱裝置 (二)，包括：一導熱板，其設有一承接面；一散熱器，其設有一底部呈開口狀之橫向組裝孔；一導熱柱，其置於該

五、創作說明 (3)

散熱器之組裝孔中，且令該導熱柱下緣露於該散熱器底部，該導熱柱係匹配橫置於該導熱板之承接面上。

為使能更進一步瞭解本創作之特徵及技術內容，請參閱以下有關本創作之詳細說明與附圖，然而所附圖式僅提供參考與說明用，並非用來對本創作加以限制者。

【實施方式】

請參閱第二圖及第三圖，本創作係提供一種散熱裝置(二)，包括有一導熱板20、一散熱器30及一導熱柱40，其中該導熱板10係呈板狀，其係以導熱性良好的金屬材料所製成，該導熱板20係具有一承接面21，該承接面21係設於該導熱板20頂面，該導熱板20之承接面21為一凹弧面，該承接面21的弧度係與導熱柱30外緣的弧度相對應。該導熱板20相對二側並各設有一連接孔22。

該散熱器30係由多數個散熱鰭片31所組成，其可為一體成型或組合式設計，該等散熱鰭片31係以導熱性良好的金屬材料所製成，該等散熱鰭片31係呈豎直設置，該等散熱鰭片31之間預留有適當的間距，可用以形成可供氣流流動之流道。該散熱器30係具有一組裝孔32，該組裝孔32係為一大於半圓且為橫向貫穿之槽孔，該組裝孔32係貫穿每一個散熱鰭片31，該組裝孔32並貫穿至該散熱器30前、後二側，該組裝孔32底部呈開口狀。

該導熱柱40係為一柱形導熱管，該導熱柱40係橫

五、創作說明 (4)

置穿設於該散熱器 30 之組裝孔 32 中，且令該導熱柱 40 下緣露於該散熱器 30 底部，並將該導熱柱 40 匹配橫置於該導熱板 20 之承接面 21 上，且該導熱柱 40、導熱板 20 及散熱器 30 並可利用燒結或焊接等方式連接為一體，可藉該導熱柱 40 將該導熱板 20 上的熱均勻的傳遞至該等散熱鰭片 31，使散熱器 30 傳熱較為均勻；藉由上述之組成以形成本創作之散熱裝置 (二)。

請參閱第四圖及第五圖，本創作散熱裝置之導熱板 20 可置於一電子發熱元件 50 上，並以該導熱板 20 底面與該電子發熱元件 50 頂面接觸，使該電子發熱元件 50 所產生的熱可傳遞至該導熱柱 40 及該散熱器 30 之散熱鰭片 31。另可進一步設有一框架 60、一風扇 70、二扣具 80 及一固定框 90，該框架 60 係框設於該散熱器 30 上，該框架 60 上相對二側各設有連接孔 61，可便於以螺絲 (圖略) 貫穿進而螺接於該導熱板 20 之連接孔 22，使該框架 60 得以螺接方式固定於該導熱板 20 上。

該風扇 70 係藉由多數個螺絲 71 貫穿螺接固定於該框架 60 上。該框架 60 頂部相對二側各形成有一肩部 62，該肩部 62 上各設有一彈性元件 63。該電子發熱元件 50 及該固定框 90 係設置於一電路板 100 上，且該固定框 90 係利用一底板 110 及多數個固定件 120 固定於該電路板 100 上，該固定框 90 係設於該電子發熱元件 50 外圍處。

五、創作說明 (5)

該二扣具80係以下端之扣勾81扣接於該固定框90四角相對應之勾孔91上，使該二扣具80固定於該固定框90相對二側處，即可以二扣具80壓制該二彈性元件63及框架60，以利用該框架60壓制於該散熱器30上，使該導熱板20底面可穩定的貼附於該電子發熱元件50頂面表面上，用以協助該電子發熱元件50散熱。

本創作主要係將散熱裝置之導熱柱40橫置於導熱板20上，當風扇70驅動氣流流動時，可使冷空氣由上方進入，流過該散熱器30之散熱鰭片31，用以協助散熱鰭片31散熱，並將熱空氣由該散熱器30二側排出，因此不會有習知於導熱柱後方形成熱氣滯流的情況發生，故本創作之散熱鰭片31具有良好的散熱效果，使散熱器30具有較佳的散熱效率。

再者，本創作之導熱柱40橫置於該導熱板20之承接面21上，兩者間具較大的接觸面積，使得導熱板20上的熱可更有效的傳遞至導熱柱40及散熱器30，以具有較佳的散熱效率。

綜上所述，本創作實為一不可多得之新型創作產品，極具產業上利用性、新穎性及進步性，完全符合新型專利申請要件，爰依專利法提出申請，敬請詳查並賜准本案專利，以保障創作者之權益。

惟以上所述僅為本創作之較佳可行實施例，非因此即拘限本創作之專利範圍，故舉凡運用本創作說明書及圖式內容所為之等效結構變化，均同理皆包含於本創作之範圍

五、創作說明 (6)

內，合予陳明。



圖式簡單說明

【圖式簡單說明】

第一圖係習知散熱裝置之立體組合圖。

第二圖係本創作散熱裝置之立體分解圖。

第三圖係本創作散熱裝置之立體組合圖。

第四圖係本創作散熱裝置使用狀態之立體分解圖。

第五圖係本創作散熱裝置使用狀態之立體組合圖。

【元件代表符號】

[習知]

1 0	導熱板	1 1	導熱柱
1 2	散熱器	1 3	風扇
1 4	散熱鰭片		

[本創作]

2 0	導熱板		
	2 1 承接面	2 2	連接孔
3 0	散熱器		
	3 1 散熱鰭片	3 2	組裝孔
4 0	導熱柱		
5 0	電子發熱元件		
6 0	框架		
	6 1 連接孔	6 2	肩部
	6 3 彈性元件		
7 0	風扇		

圖式簡單說明

7 1 螺 絲
8 0 扣 具
8 1 扣 勾
9 0 固 定 框
9 1 勾 孔
1 0 0 電 路 板
1 1 0 底 板
1 2 0 固 定 件



六、申請專利範圍

1、一種散熱裝置（二），其係用於協助電子發熱元件散熱，包括：

一導熱板，其具有一承接面；

一散熱器，其具有一底部呈開口狀之橫向組裝孔；及

一導熱柱，其置於該散熱器之組裝孔中，且令該導熱柱下緣露於該散熱器底部，該導熱柱係匹配橫置於該導熱板之承接面上。

2、如申請專利範圍第1項所述之散熱裝置（二），其中該散熱器係由多數個散熱鰭片組成，該等散熱鰭片係呈豎直設置，該等散熱鰭片之間預留有間距，以形成流道。

3、如申請專利範圍第1項所述之散熱裝置（二），其中該散熱器之組裝孔為一大於半圓之槽孔，該組裝孔並貫穿至該散熱器前、後二側。

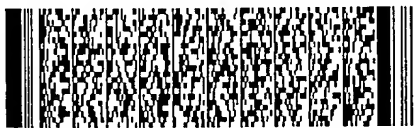
4、如申請專利範圍第1項所述之散熱裝置（二），其中該導熱柱、導熱板及散熱器係連接為一體。

5、如申請專利範圍第1項所述之散熱裝置（二），其進一步設有一框架、一風扇、二扣具及一固定框，該框架係框設於該散熱器上，該風扇係固定於該框架上，該框架頂部相對二側各形成有一肩部，該肩部上設有彈性元件，該電子發熱元件及該固定框係設於一電路板上，該固定框係設於該電子發熱元件外圍處，該二扣具係扣接於該固定框，以二扣具壓制該二彈性元件及框架，使該框架壓制於該散熱器上，使該導熱板底面貼附於該電子發熱元件頂

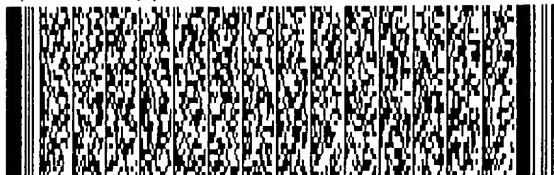
六、申請專利範圍

面。

6、如申請專利範圍第1項所述之散熱裝置(二)，其中該導熱板之承接面為一凹弧面。



第 1/13 頁



第 2/13 頁



第 3/13 頁



第 4/13 頁



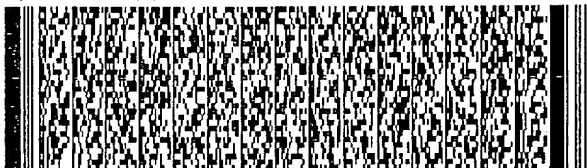
第 4/13 頁



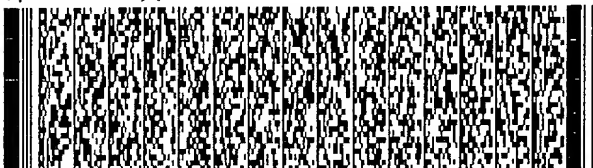
第 5/13 頁



第 5/13 頁



第 6/13 頁



第 6/13 頁



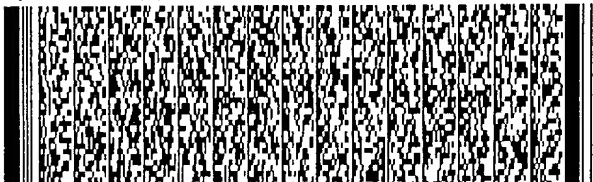
第 7/13 頁



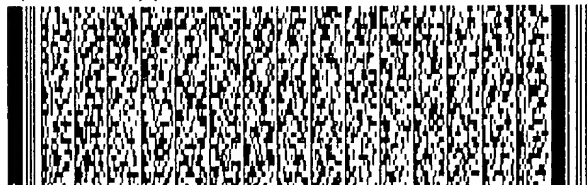
第 7/13 頁



第 8/13 頁



第 8/13 頁



第 9/13 頁



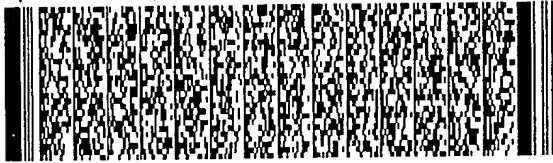
第 10/13 頁



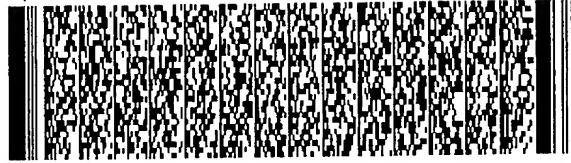
第 11/13 頁



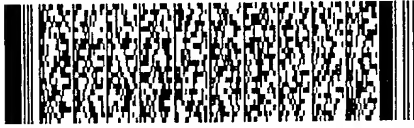
第 12/13 頁

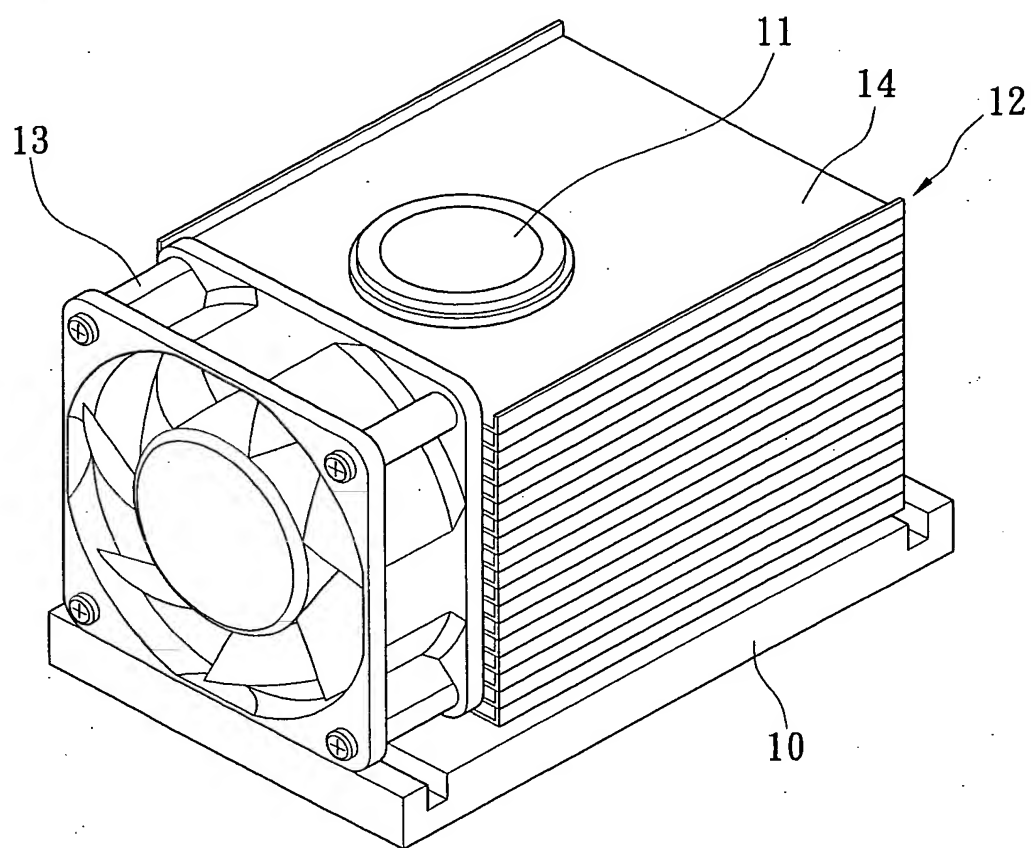


第 12/13 頁

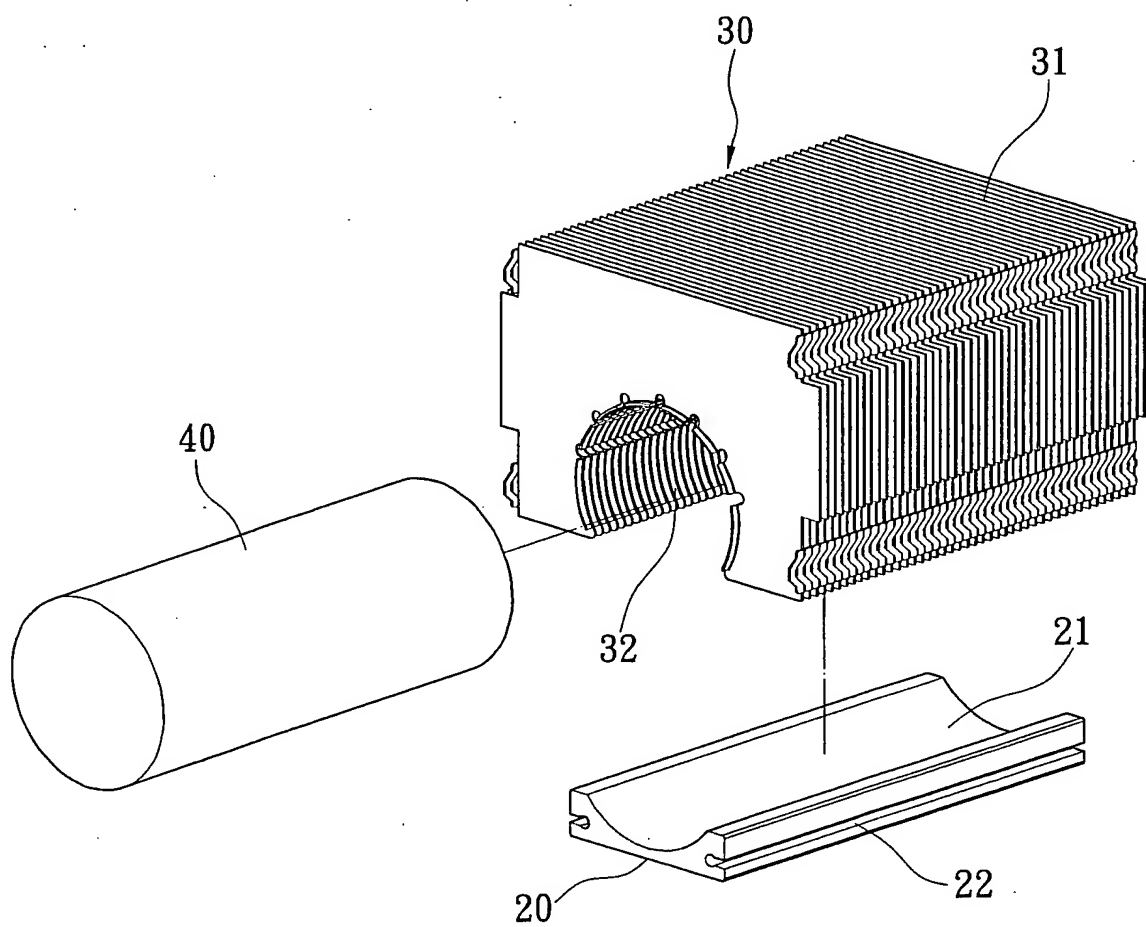


第 13/13 頁

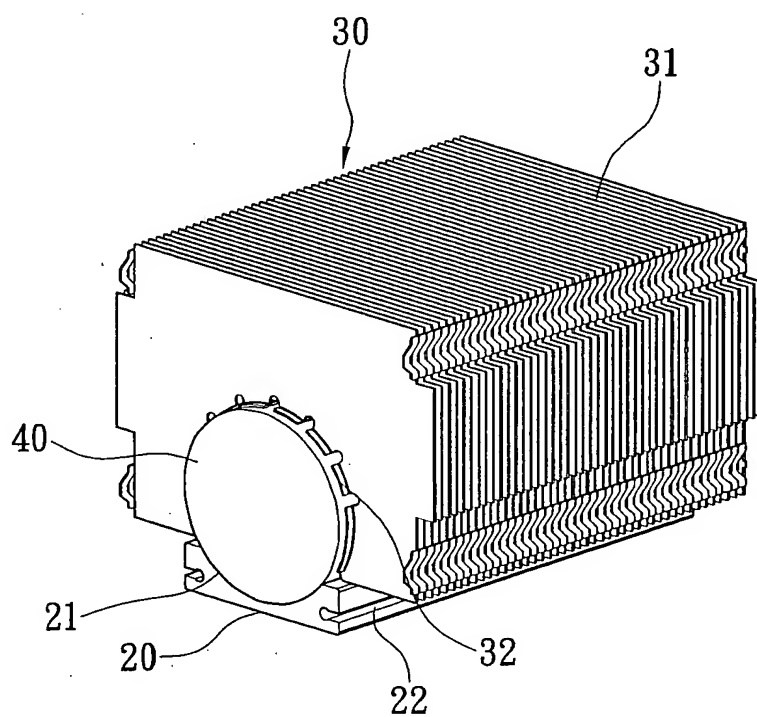




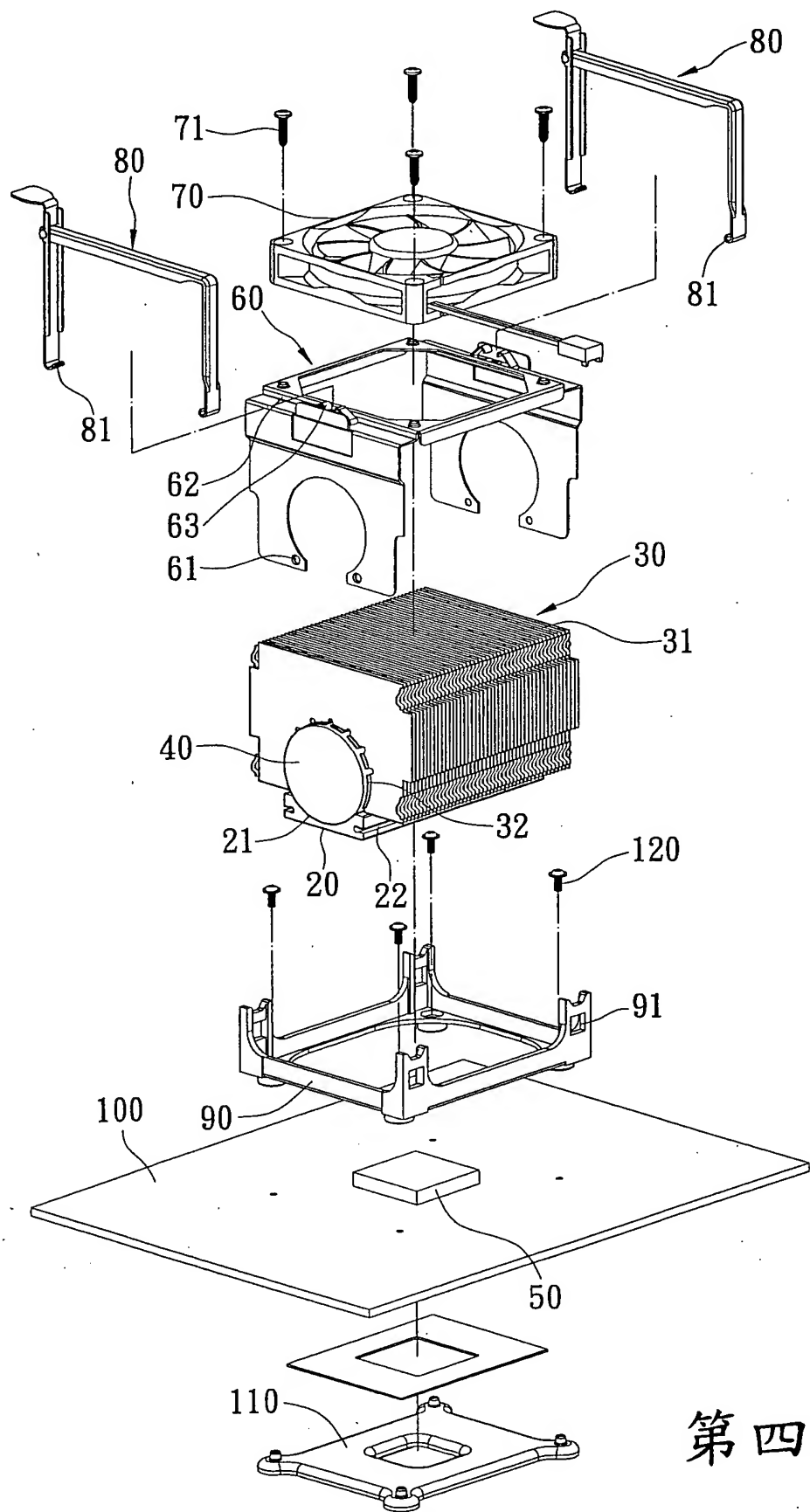
第一圖



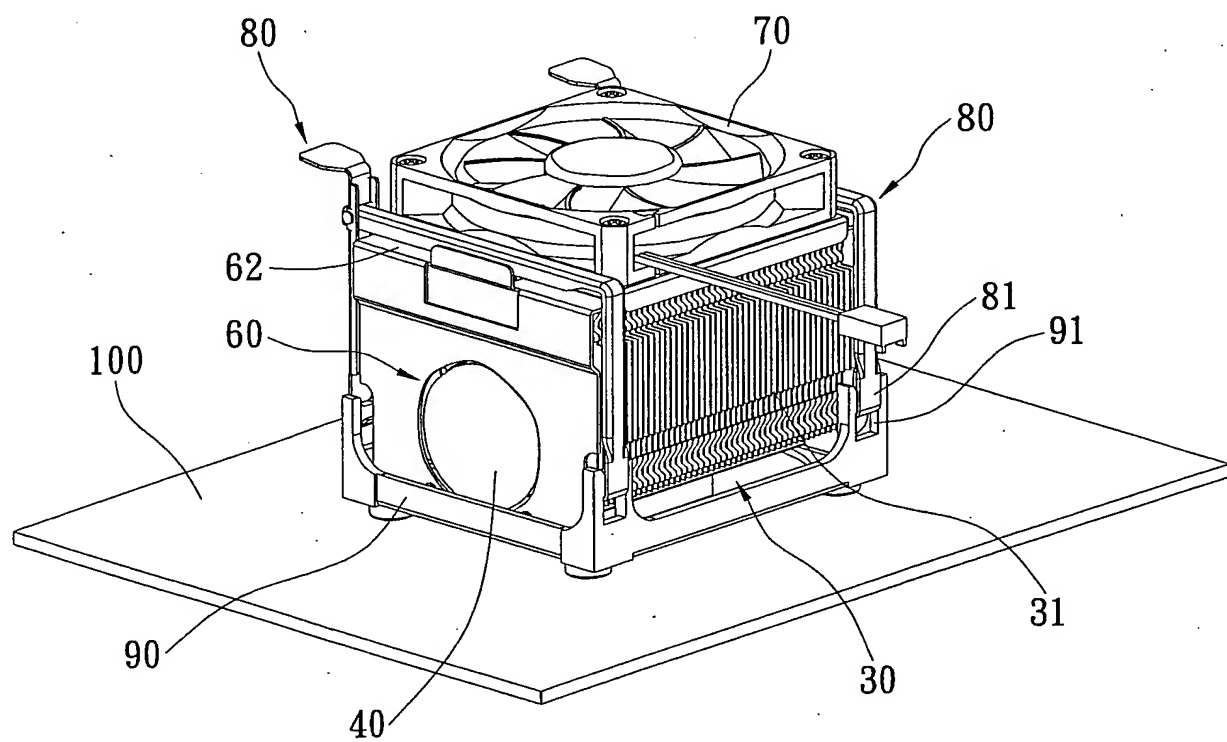
第二圖



第三圖



第四圖



第五圖

Taiwan Patent App. No.	92201963
Filing Date	JAN. 30, 2003
Molex Ref.	A3-245 UM TW
Lien-Cheng Ref.	92P00094

Title of Invention		HEAT-DISSIPATING DEVICE
Inventor	Names	1. TANG JI-HAI 2. ZHANG MIN
	Domicile	1. C Zone, Ming Hua Road, No 3 Industrial Area Juzhou, Shijie Town, Dongguan City, Guangdong Province, P. R. China
	Nationality	1. China 2. China
Applicant	Name	MOLEX INCORPORATED
	Domicile	2222 Wellington Court., Lisle, IL 60532-1682 U. S. A.
	Nationality	U. S. A.
	Representative	Louis A. Hecht

A F F I D A V I T

I, Ken Du being duly sworn, depose and say:

That I am thoroughly conversant with the Chinese and English languages, that I have carefully read the attached translation and compared same with original document in Chinese language (the application number 92201963), that said translation is a true and correct version of such original, to the best of my knowledge and belief.

My name and post office address are as stated below:

Full name of translator: Ken Du

Signature of translator: Ken Du

Post office address: 3F, 22-1, Wan-Ching Street, Taipei, Taiwan, R.O.C.

Date: December 8, 2003

HEAT-DISSIPATING DEVICE

BACKGROUND OF THE INVENTION

(1) Field of The Invention

The present invention relates to a heat-dissipating device; more
5 particularly to a heat-dissipating device disposed on a heating electronic
component for heat dissipating.

(2) Description of The Related Art

Current electronic components, such as CPUs or semiconductor packages
used in computers or servers, have a high manipulation speed. Thus, when the
10 electronic component is executed under full load, the temperature of its surface
will be rather high even up to above 100.degree. C. In order to dissipate heat
generated by the electronic component, various heat dissipation modules, such
as a fan or a heat sink with a bigger area, are mounted with the electronic
components for dissipating the heat generated from the electronic components,
15 so as to prevent the electronic components from being damaged due to
overheat.

Please referring to Fig.1, a conventional heat-dissipating device has a
heat-conducting plate 10, a heat-conducting block 11, a heat sink 12 and a fan
13.

20 The heat-conducting plate 10 is a flat shape.

The heat-conducting block 11 is a cylindrical heat pipe. The
heat-conducting block 11 is vertically disposed on the heat-conducting plate 10.

The heat sink 12 has a plurality of fins 14 horizontally disposed on the
heat-conducting plate 10. The heat-conducting block 11 is received in the fins

14 of the heat sink 12, so that a heat of the heat-conducting plate 10 is uniformly transmitted to the fins 14 of the heat sink 12 through the heat-conducting block 11.

5 The heat-conducting plate 10 is disposed on a heating electronic component (not shown) and suitably fixed. A heat of the heating electronic component is transmitted to the heat sink 12 through the heat-conducting block 11 for heat dissipating.

The fan 13 is disposed at a front side of the heat sink 12. When the fan 13 is driven, cool air flows to the fins 14 of the heat sink 12 for heat dissipating; 10 furthermore, heat air is discharged from a rear side of the heat sink 12.

However, the heat-conducting block 11 of the conventional heat-dissipating device is vertically disposed. When the fan 13 is driven, cool air does not flow to a rear side of the heat-conducting block 11 to cause stagnation of heat air. Heat of the fins 14 behind the heat-conducting block 11 15 is not effectively dissipated, so that a heat dissipating efficiency of the conventional heat-dissipating device is decreased.

Therefore, according to above descriptions, the conventional heat-dissipating device still has some inconvenient issues, which need to be improved.

20 SUMMARY OF THE INVENTION

The primary object of the present invention is to provide a heat-dissipating device with a better heat-dissipating efficiency, which does not cause stagnation of heat air.

Another object of the present invention is to provide a heat-dissipating

device having a bigger contact area of the heat-conducting block and the heat sink, so that heat of the heat-conducting plate is effectively transmitted to the heat-conducting block and the heat sink.

In order to achieve the above objects, the present invention is to provide a
5 heat-dissipating device. The heat-dissipating device has a heat-conducting plate having a holding surface, a heat sink defining a clipping hole formed at a bottom thereof, a heat-conducting block received in the clipping hole and disposed on the holding surface.

It is to be understood that both the foregoing general description and the
10 following detailed description are exemplary, and are intended to provide further explanation of the invention as claimed.

Other advantages and features of the invention will be apparent from the following description, drawings and claims.

BRIEF DESCRIPTION OF THE DRAWINGS

15 Fig.1 is a perspective view of a conventional heat-dissipating device;

Fig.2 is an exploded view of a heat-dissipating device in accordance with the present invention;

Fig.3 is a perspective view of a heat-dissipating device in accordance with the present invention;

20 Fig.4 is an exploded view that shows the heat-dissipating device in use; and

Fig.5 is a perspective view that shows the heat-dissipating device in use.

DETAILED DESCRIPTION OF PREFERRED EMBODIMENTS

Please referring to Fig. 2 and 3, the present invention provides a heat-dissipating device having a heat-conducting plate 20, a heat sink 30 and a heat-conducting block 40.

5 The heat-conducting plate 20 is a flat shape, which is made of a metal material with good heat conduction. The heat-conducting plate 20 has a holding surface 21 formed on a top side thereof; moreover, the holding surface 21 of the heat conducting plate 20 is a concave shape corresponding to an exterior of the heat sink 30. Besides, the heat-conducting plate 20 further has two slots 22
10 formed on two opposite sides thereof.

 The heat sink 30 defining a clipping hole 32 formed at a bottom thereof wherein the clipping hole 32 of the heat sink 30 is defined from a front side of the heat sink 30 to a rear side of the heat sink 30. The heat sink 30 has a plurality of fins 31 vertically disposed and arranged parallel to each other for
15 air flowing. Furthermore, the heat sink 30 is combined or integrally formed into one piece.

 The heat-conducting block 40 is a cylindrical heat pipe. The heat-conducting block 40 is transversely received in the clipping hole 32 of the heat sink 30 and disposed on the holding surface 21 for heat dissipating.

20 The heat-conducting plate 20, the heat sink 30 and the heat-conducting block 40 are combined into one piece by welding or sintering, so that a heat of the heat-conducting plate 20 is uniformly transmitted to the fins 31 of the heat sink 30 through the heat-conducting block 40.

 Please referring to Fig. 4 and 5, the heat-conducting plate 20 is disposed

on a heating electronic component 50 and a bottom of the heat-conducting plate 20 is mated to a top of the heating electronic component 50, so that a heat of the heating electronic component 50 is transmitted to the fins 31 of the heat sink 30 through the heat-conducting block 40.

5 The heat-dissipating device further has a fixed base 90, a frame 60, a fan 70 and two clips 80.

 The fixed base 90 is disposed around a heating electronic component 50 on a printed circuit board 100, which receives the heat sink 30; moreover, the fixed base 90 is fixed by a supporting base 110 and fixing parts 120.

10 The frame 60 is disposed around the heat sink 30, which has two shoulder portion 62 respectively formed at two opposite top sides thereof and two elastic elements 63 respectively disposed on the two shoulder portions 62. The frame 60 further defines two pairs of connecting holes 61 formed at two opposite bottom sides thereof, so that the frame 60 is screwed to the two slots 22 of the
15 heat-conducting plate 20.

 The fan 70 is fixed on the frame 60 by screws 71. The fixed base 90 further defines four hooked holes 91 formed at four corners thereof.

 Each of the two clips 80 has two hooks 81 respectively hooking the four hooked holes 91 of the fixed base 90 to clip the fixed base 90 and press the two
20 elastic elements 63 of the frame 60, so that the heat-conducting plate 20 abuts against the heating electronic component 50.

 When the fan 70 is driven, cool air flows to the fins 31 of the heat sink 30 for heat dissipating; furthermore, heat air is discharged from two side of the heat sink 30 for avoiding stagnation of heat air. Therefore, the fins 31 of the

heat sink 30 have a good efficiency of heat dissipating.

Furthermore, the heat-conducting block 40 is transversely disposed on the holding surface 21, which has a bigger contact area. Consequently, the heat of the heat-conducting plate 20 is efficiently transmitted to the fins 31 of the heat
5 sink 30 through the heat-conducting block 40, so as to has a good heat dissipating efficiency.

Therefore, the foregoing is considered as illustrative only of the principles of the invention. Further, since in the art, it is not desired to limit the invention to the exact construction and operation show and described, and accordingly,
10 all suitable modifications and equivalents may be resorted to, falling within the scope of the invention.

What is claimed is:

1. A heat-dissipating device for an heating electronic component,
comprising:

a heat-conducting plate having a holding surface;

5 a heat sink defining a clipping hole formed at a bottom thereof; and

a heat-conducting block received in the clipping hole and disposed on the
holding surface.

2. The heat-dissipating device as claimed in claim 1, wherein the heat sink
has a plurality of fins vertically disposed and arranged parallel to each other for
10 air flowing.

3. The heat-dissipating device as claimed in claim 1, wherein the clipping
hole of the heat sink is defined from a front side of the heat sink to a rear side
of the heat sink.

4. The heat-dissipating device as claimed in claim 1, wherein the
15 heat-conducting plate, the heat sink and the heat-conducting block are
combined into one piece.

5. The heat-dissipating device as claimed in claim 1, further comprising:
a fixed base disposed around a heating electronic component on a printed
circuit board and receiving the heat sink;

20 a frame disposed around the heat sink and having two shoulder portion
respectively formed at two opposite top sides thereof and two elastic elements
respectively disposed on the two shoulder portions;

a fan fixed on the frame; and

two clips respectively clipping the fixed base and pressing the two elastic

elements of the frame, so that the heat-conducting plate abuts against the heating electronic component.

6. The heat-dissipating device as claimed in claim 1, wherein the holding surface of the heat-conducting plate is a concave shape.

ABSTRACT

A heat-dissipating device for an heating electronic component has a heat-conducting plate having a holding surface, a heat sink defining a clipping hole formed at a bottom thereof and a heat-conducting block received in the clipping hole and disposed on the holding surface, so that the heat-dissipating device has a good heat-dissipating efficiency.

Index

[Present]

heat-conducting plate	20		
holding surface	21	slot	22
heat sink	30		
fin	31	clipping hole	32
heat-conducting block	40		
heating electronic component	50		
frame	60		
connecting holes	61	shoulder portion	62
elastic element	63		
fan	70		
screw	71		
clip	80		
hook	81		
fixed base	90		
hooked hole	91		
printed circuit board	100		
supporting base	110		
fixing part	120		

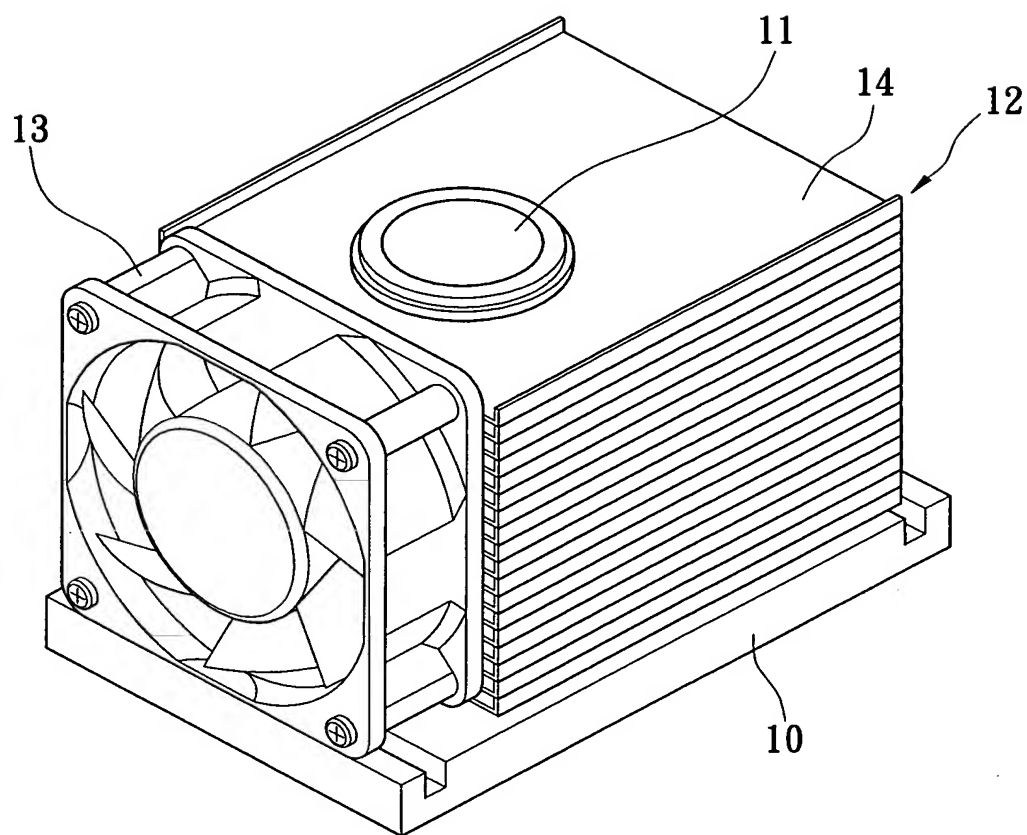


FIG. 1
PRIOR ART

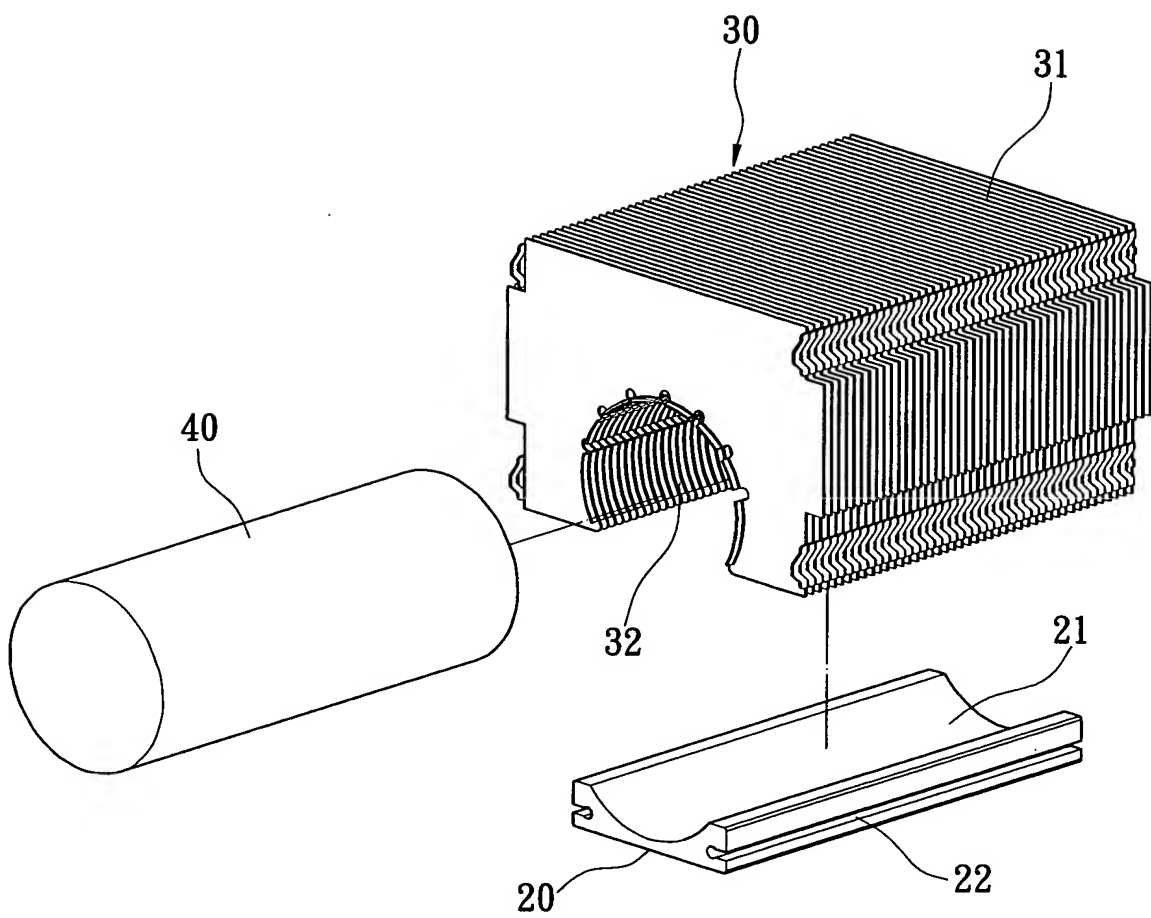


FIG. 2

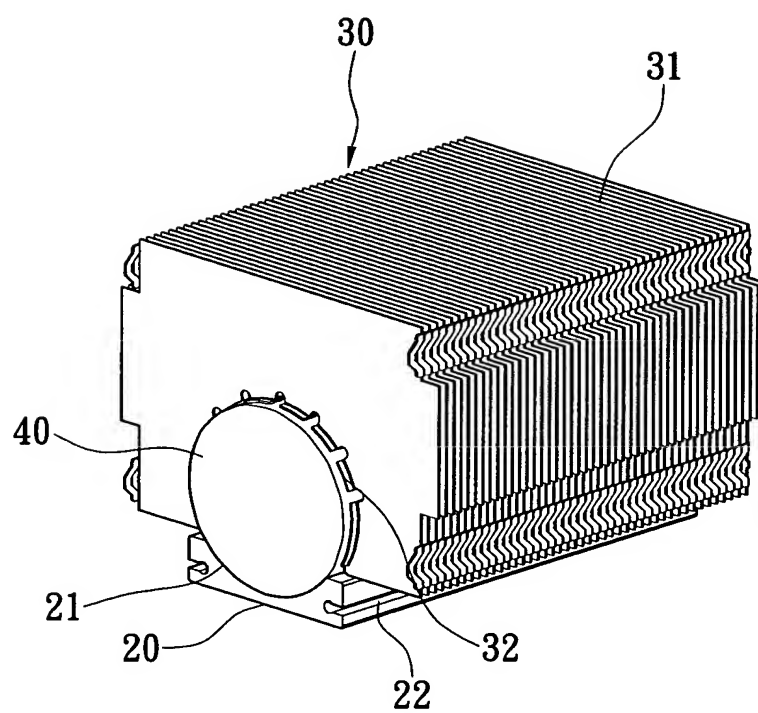


FIG. 3

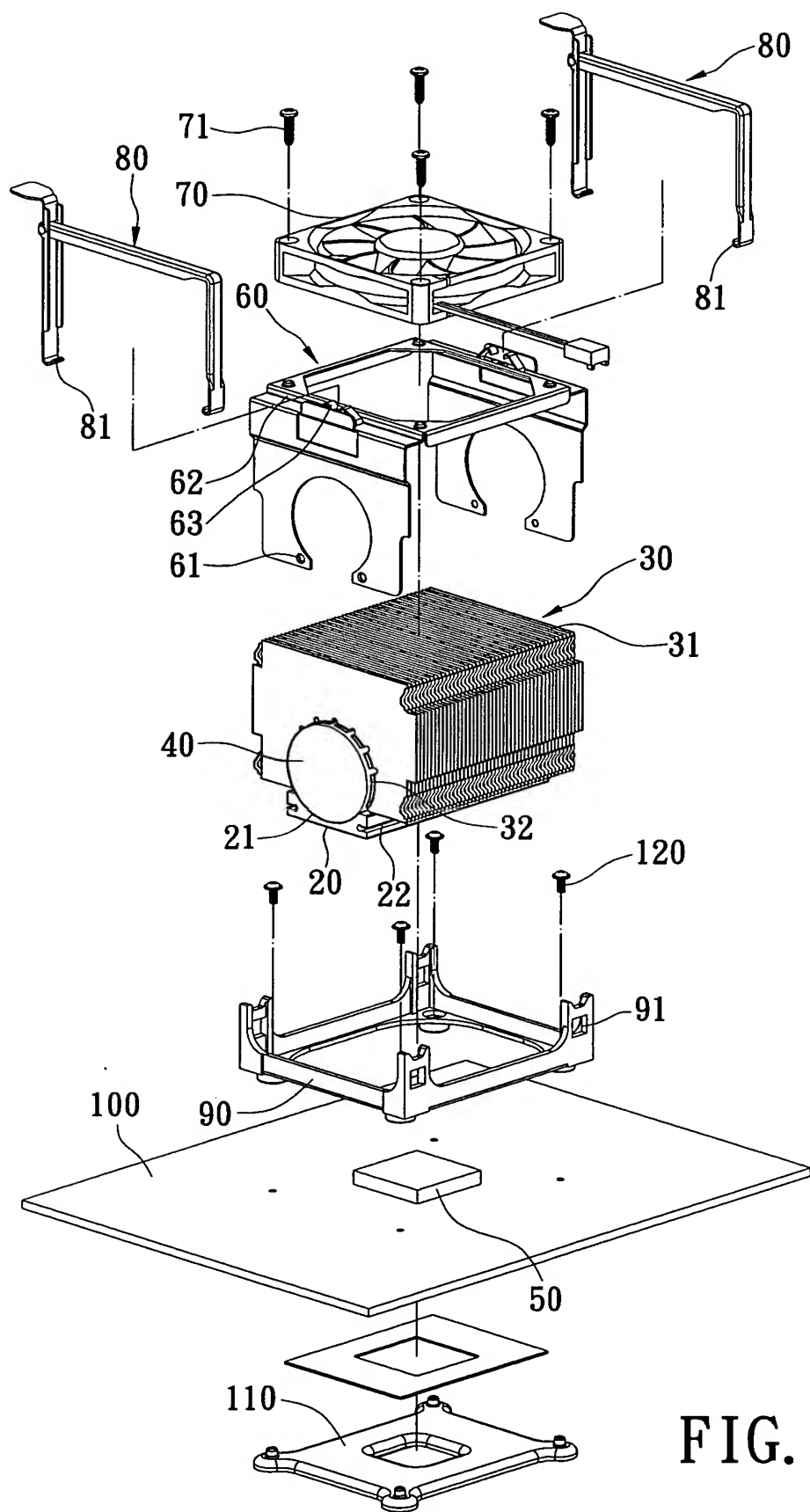


FIG. 4

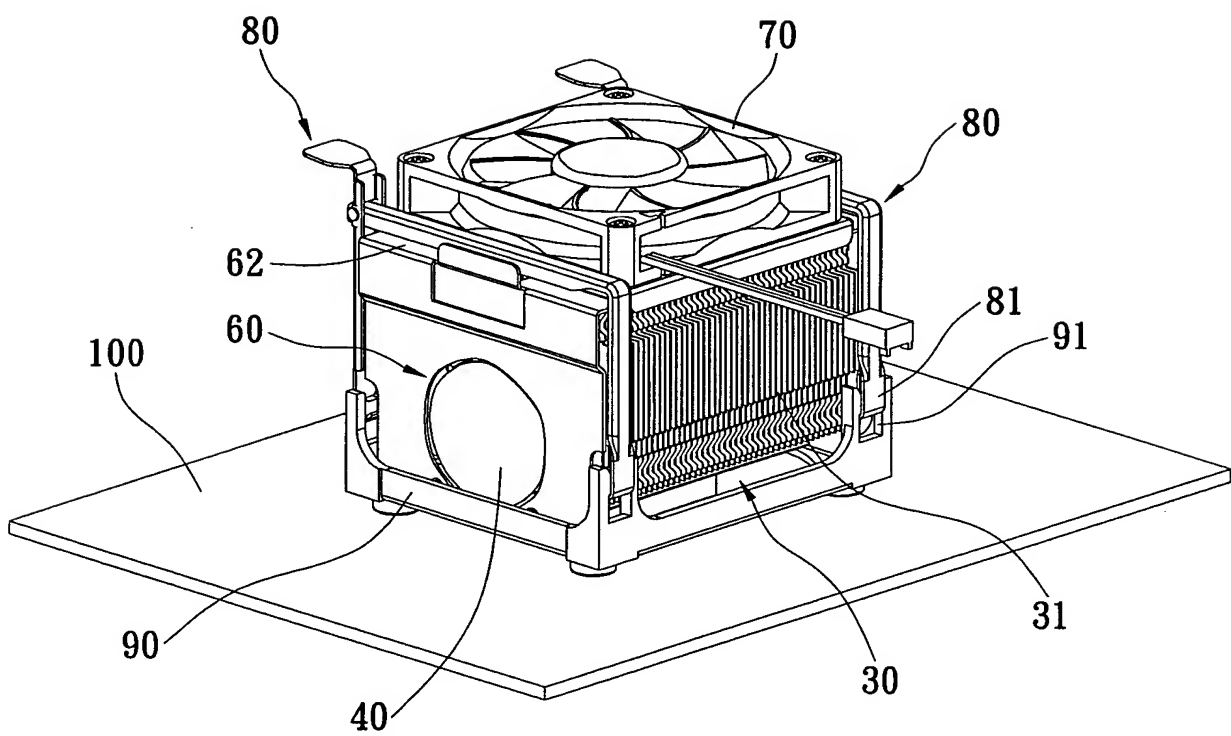


FIG. 5